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biometry and we are not disappointed. However, the author has, wisely enough, avoided an extensive treatment of statistical methods. In the second part, blastogenic variation and those due to the conditions of life are treated in several chapters. In part III, natural selection and adaptive variations are discussed.

The work contrasts favorably with much that has been written on variation and evolution in a semi-popular way, in that the author retains a firm hold on ascertained fact. There is little special pleading in the book, and large generalizations are sparingly attempted; results are impartially presented and their obvious import expressed. On the other hand, the author lacks something of that vigor and enthusiasm that one finds in the champion of a cause; and occasionally there is a lack of that critical and unifying spirit that accompanies complete assimilation of the subject. For example, after reviewing Weldon's paper of 1892, our author approves Weldon's conclusion, based on shrimps, that correlation between two organs is "practically constant" for different localities. On the next page he mentions Pearson's general dissent from this view, without coming to any decision, while nothing is said of Dr. Lee's paper (1901) where the correlation-coefficient between length and height of head is given, for the Ainos as 0.50 and for the German as 0.10, showing an entire absence of constancy.

On the other hand, the treatment of certain subjects is very good. The imperfect fertility of dissimilar races when crossed is well worked out; new data concerning identical twins are given; the theory of regression is clearly explained and many facts quoted as to the effect of external conditions. In discussing adaptation, the author accepts self-adaptation as a factor subsidiary to natural selection. The degeneration of disused organs he finds difficult to account for. He should remember that all "degeneration" is not due to disuse; and that animals with "degenerate" organs, however arisen, can still be adapted if they get into situations where these organs are of no use.—C. B. DAVENPORT.

Two elementary texts.

BOTANICAL texts for the secondary schools multiply apace. Professor Stevens, of the University of Kansas, has published an *Introduction to botany*, which has many good features to commend it.² It is an attempt to combine the instruction of the laboratory handbook and the necessary information of the text-book. To secure the proper relations of laboratory work and reading he has introduced the laboratory directions before the discussion of the topic to which they relate. These directions are in the main clear and concise, and the work for which they provide well chosen. A particularly commendable feature is that the experiments in plant physiology are not only

² STEVENS, WILLIAM CHASE, *Introduction to botany*, pp. x + 436, *figs.* 340. Boston: D. C. Heath & Company, 1902.

well selected, but are intermixed with the work on anatomy to which they are related.

Some chapters and sections will doubtless prove very puzzling to beginners, especially those which treat of such difficult subjects as alternation of generations, heterospory, and the fertilization of the egg in angiosperms. The extreme condensation and briefness of treatment will almost defeat the purpose of the author, and we fear will cause these subjects, which ought to be made plain, to be looked upon still as beyond the reach of elementary students. The book is notable for its excellent diagrams, and on the whole is likely to prove its value by use.

Mr. E. F. Andrews,³ of the Washington, Ga., high school, calls his book *Botany all the year round*, in itself a taking title. In the body of the book he provides ample work to occupy the students through the winter as well as the summer. Each section is preceded by a list of material needed for its study. In connection with the reading matter directions are given for the use of this material, and at the close of the section the student is confronted with a number of "practical questions." The material for study consists chiefly of the flowering plants, only one chapter (of less than forty pages) being devoted to seedless plants and one (of thirteen pages) to ecology. The rest of the book is chiefly concerned with morphology and physiology, the former strongly tinged with the formal morphology of the older school, while the latter is not always accurate, and occasionally distinctly bad. In this part also one finds a good deal of ecology, and the student will likely be confused as to the scope of ecology by the existence of a separate chapter with this label. The practical questions are mostly well calculated to set the student to thinking, but too often they are impossible for him to answer with the data at hand. This tempts him to guess and reason *a priori*, which is directly contrary to the training sought by science work. Not infrequently the author suggests an answer by referring the student to some preceding paragraph, and so cases could easily be cited to show that the asker could not answer his own questions rightly. The book gives one the impression that the author has some familiarity with modern botany, but that he has not yet thoroughly assimilated the facts which he knows. Though the book has much to commend it, it cannot compare in real value with Stevens's and several others which could be named.—C. R. B.

MINOR NOTICES.

MR. A. S. HITCHCOCK,⁴ assistant agrostologist of the U. S. Department of Agriculture, has published a monograph of the ten North American species of the genus *Leptochloa*. No new species are described, and some forms

³ANDREWS, E. F., *Botany all the year round*, pp. 302, *figs.* 543. New York: American Book Company. 1903.

⁴HITCHCOCK, A. S., *North American Species of Leptochloa*. U. S. Dept. of Agric., Bureau of Plant Industry. Bull. 33. pp. 24. *pls.* 61. 1903.